

Minimum 101 lbf Linear Force

- For damper surfaces up to 32 sq-ft*



Actuators in bold have BDCM

AH Series - At A Glance

		<i>AHB(X)24-3(-100)(-200)(-300) (p. 319)</i>	<i>AHX120-3(-100)(-200)(-300) (p. 321)</i>	<i>AHB(X)24-SR(-100)(-200) (p. 323)</i>	<i>AHX120-SR(-100)(-200) (p. 325)</i>	<i>AHX24-MFT-100(-200)(-300) (p. 327)</i>	<i>AHQB(X)24-1-100 (p. 329)</i>	<i>AHQB(X)24-MFT-100 (p. 331)</i>
Basic Product		●		●			●	●
Flexible Product		●	●	●	●	●	●	●
Linear Force	101 lbf [450 N]	●	●	●	●	●		
	44 lbf [200 N]						●	●
Linear Stroke	4" [100mm]	●	●	●	●	●	●	●
	8" [200mm]	●	●	●	●	●		
	12" [300mm]	●	●		●	●		
Power Supply	24 VAC/DC	●		●		●	●	●
	120 VAC		●		●			
Control Input	On/Off						●	
	On/Off, Floating Point	●	●					
	2 to 10 VDC (4 to 20mA)			●	●			
	Multi-Function Technology					●		●
Feedback	None	●	●				●	
	2 to 10 VDC			●	●			
	Variable (0 to 10 VDC)					●		●
Running Time	150 seconds	●	●	●	●	●		
	7 seconds						●	●
Wiring	Plenum Rated Cable	●		●		●	●	●
	Appliance Cable		●		●			
	Conduit Fitting	●	●	●	●	●	●	●

Installation and Operation... (page 265).

*Based on 4 in-lb/ft² damper torque loading. Parallel blade. No edge seals.

A CLOSER LOOK...

- Brushless DC Motor for Added Accuracy and Controllability.
- Don't Worry about Actuator Burn-Out; Belimo is Overload Proof throughout Rotation.
- Enjoy Added Flexibility with Easy Mechanical Stops to Adjust Linear Movement.
- Need to Change Control Direction? Do it easily with a Simple Switch.
- Easily Accessible Manual Override Button helps you Pre-Tension Damper Blades.
- Standard 3ft Plenum Rated Cable and Conduit Connector Provided on Basic Models.
- Added Flexibility to Select Clamp, Electrical Connection, and Running Time to fit your Specific Application with Belimo's New Flexible Line of Actuators.



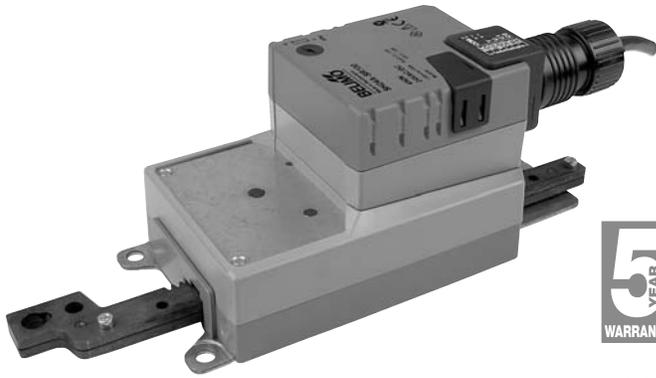
M40024 - 05/10 - Subject to change. © Belimo Aircontrols (USA), Inc.

The Belimo Difference

- **Customer Commitment.**
Extensive product range. Application assistance.
Same-day shipments. Free technical support. Five year warranty.
- **Low Installation and Life-Cycle Cost.**
Easy installation. Accuracy and repeatability.
Low power consumption. No maintenance.
- **Long Service Life.**
Components tested before assembly. Every product tested before shipment.
30+ years direct coupled actuator design.

AHB(X)24-3(-100)(-200)(-300)

On/Off, Floating Point, Non-Spring Return, Linear Stroke, 24 V



Technical Data	AHB(X)24-3(-100)(-200)(-300)
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 20%
Power consumption	2 W (0.5 W)
Transformer sizing	4.5 VA (Class 2 power source)
Electrical connection	18 GA appliance rated cable 1/2" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout full stroke
Control	on/off, floating point
Input impedance	600 Ω
Linear Stroke	
AHB(X)24-3-100	4 in [100 mm]
AHB(X)24-3-200	8 in [200 mm]
AHB(X)24-3-300	12 in [300 mm]
Linear force	101 lbf [450 N]
Stroke direction	reversible with ↓/↑ switch
Manual override	external push button
Running time	150 seconds per 4" [100mm]
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1-02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AHB(X)24-3-100	2.6 lbs [1.18 kg]
AHB(X)24-3-200	2.7 lbs [1.23 kg]
AHB(X)24-3-300	2.9 lbs [1.32 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Linear Force min. 101lbf for control of damper surfaces up to 32 sq. ft.

Application

For on/off and floating point control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

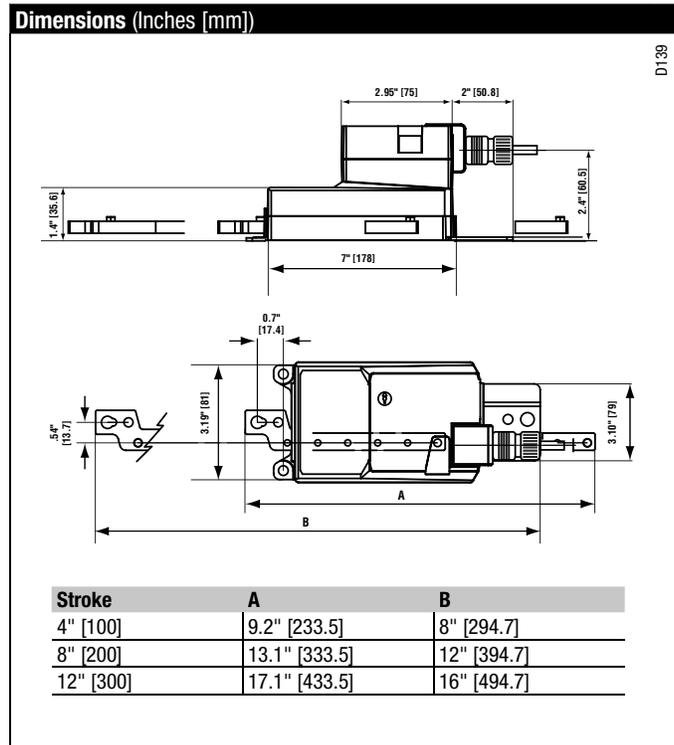
Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The AHB(X)... series provides 4, 8, or 12 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHB(X)24-3... actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.



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Accessories

Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
P370	Shaft Mount Auxiliary Switch

NOTE: When using AHB(X)24-3... actuators, only use accessories listed on this page.

Typical Specification

Floating point, on/off control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators shall have brushless DC motor technology and be protected from overload at all positions of linear stroke. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cUL Approved, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

✂️ INSTALLATION NOTES

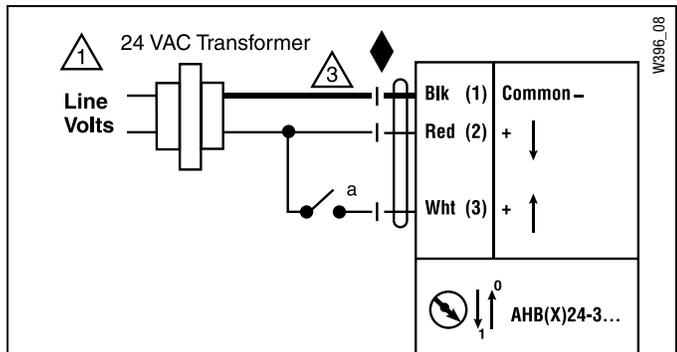
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by 24 VDC.

📄 APPLICATION NOTES

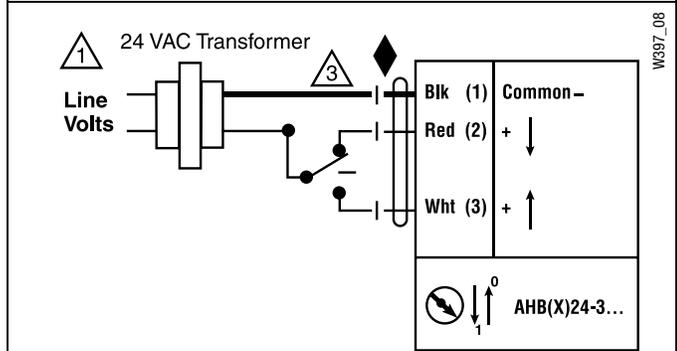
- ◆ Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

⚠️ WARNING Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



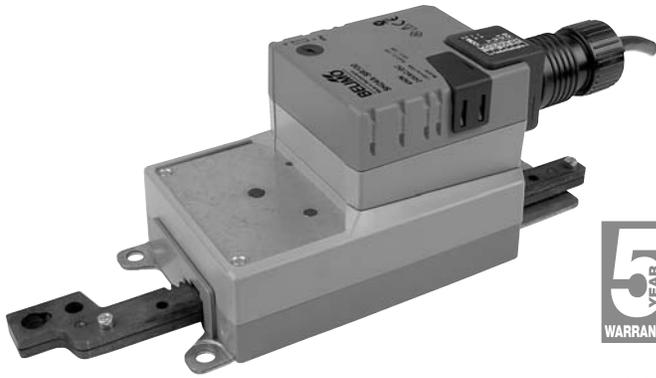
On/Off control



Floating Point or On/Off control

AHX120-3(-100)(-200)(-300)

On/Off, Floating Point, Non-Spring Return, Linear Stroke, 100 to 240 VAC



Technical Data	AHX120-3(-100)(-200)(-300)
Power supply	100 to 240 VAC 50/60 Hz (nominal) 85 to 265 VAC 50/60 Hz (tolerance)
Power consumption	2.5 W
Transformer sizing	4.5 VA (Class 2 power source)
Electrical connection	18 GA appliance rated cable 1/2" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout full stroke
Control	on/off, floating point
Input impedance	600 Ω
Linear stroke	
AHX120-3-100	4 in [100 mm]
AHX120-3-200	8 in [200 mm]
AHX120-3-300	12 in [300 mm]
Linear force	101 lbf [450 N]
Stroke direction	reversible with ↓/↑ switch
Manual override	external push button
Running time	150 seconds per 4" [100mm]
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA C22.2 No. 24, CE according to #74123IEEC
Noise level (max)	35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AHX120-3-100	2.6 lbs [1.18 kg]
AHX120-3-200	2.7 lbs [1.23 kg]
AHX120-3-300	2.9 lbs [1.32 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Linear Force min. 101lbf for control of damper surfaces up to 30 sq. ft.

Application

For on/off and floating point control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

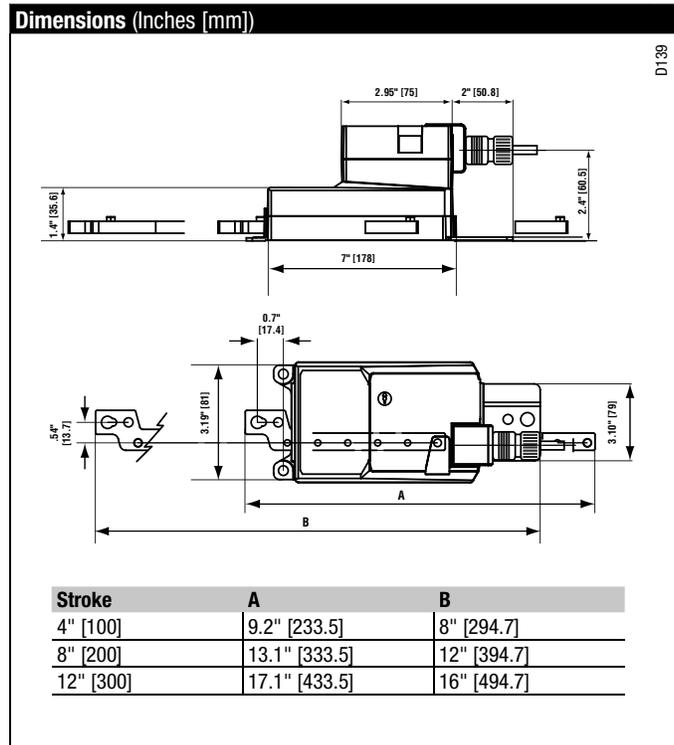
Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The AHX... series provides 4, 8, or 12 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHX120-3... actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.



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Accessories

Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
KG6	Ball Joint
KG8	Ball Joint (90° angle)
KG10A	Ball Joint
P370	Shaft Mount Auxiliary Switch

NOTE: When using AHX120-3... actuators, only use accessories listed on this page.

Typical Specification

Floating point, on/off control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators shall have brushless DC motor technology and be protected from overload at all positions of linear stroke. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cUL Approved, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

✂️ INSTALLATION NOTES

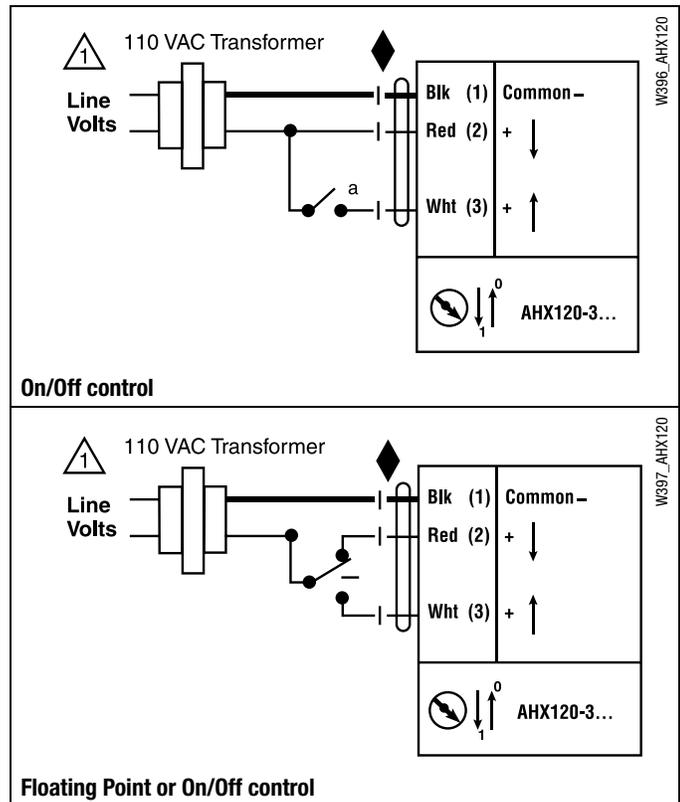
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by 24 VDC.

📄 APPLICATION NOTES

- ◆ Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

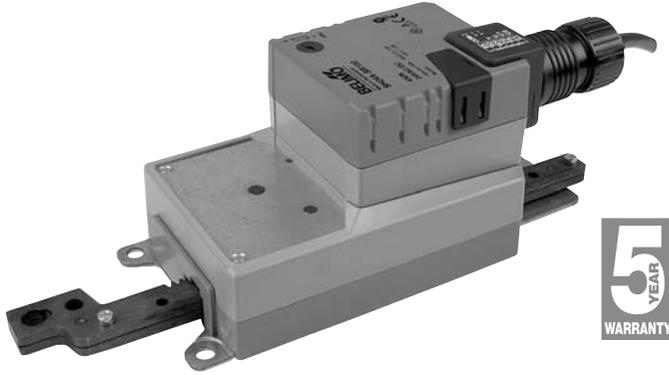
⚠️ WARNING Live Electrical Components!

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AHB(X)24-SR(-100)(-200)

Proportional, Non-Spring Return, Linear Stroke, 24 V, for 2 to 10 VDC or 4 to 20 mA



Technical Data	AHB(X)24-SR(-100)(-200)
Power supply	24 VAC \pm 20% 50/60 Hz 24 VDC \pm 20%
Power consumption	2.5 W (0.5 W)
Transformer sizing	4.5 VA (Class 2 power source)
Electrical connection	18 GA plenum rated cable 1/2" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout full stroke
Control	2 to 10 VDC, 4 to 20 mA
Input impedance	100 k Ω (0.1 mA), 500 Ω
Feedback output U	2 to 10 VDC (max 0.5 mA)
Linear stroke	
AHB(X)24-SR-100	4 in [100 mm]
AHB(X)24-SR-200	8 in [200 mm]
Linear force	101 lbf [450 N]
Stroke direction	reversible with \downarrow/\uparrow switch actuator will move in the selected direction with increasing control signal (2 to 10V)
Manual override	external push button
Running time	150 seconds per 4" [100mm] variable
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AHB(X)24-SR-100	2.6 lbs [1.78 kg]
AHB(X)24-SR-200	2.7 lbs [1.23 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Force min. 101 lbf for control of damper surfaces up to 32 sq. ft.

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator operates in response to a 2 to 10 VDC, or with the addition of a 500 Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

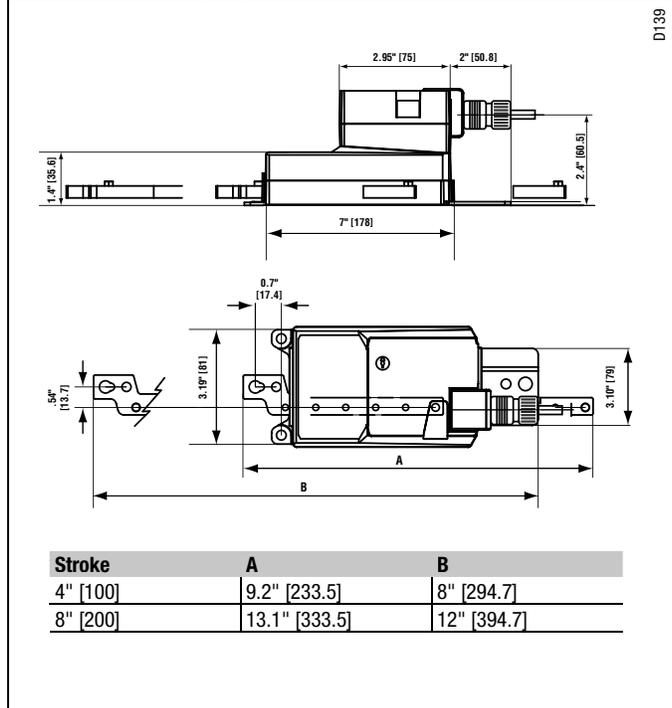
The AHB(X)24 series provides 4 or 8 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHB(X)24-SR... actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Dimensions (Inches [mm])



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Accessories	
Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
P370	Shaft Mount Auxiliary Switch
SGA24	Min Positioners in NEMA 4 Housing
SGF24	Min Positioners for Flush Panel Mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

NOTE: When using AHB(X)24-SR... actuators, only use accessories listed on this page.

Typical Specification

Proportional control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500 Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position indication. Actuators shall be cUL Approved, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

INSTALLATION NOTES

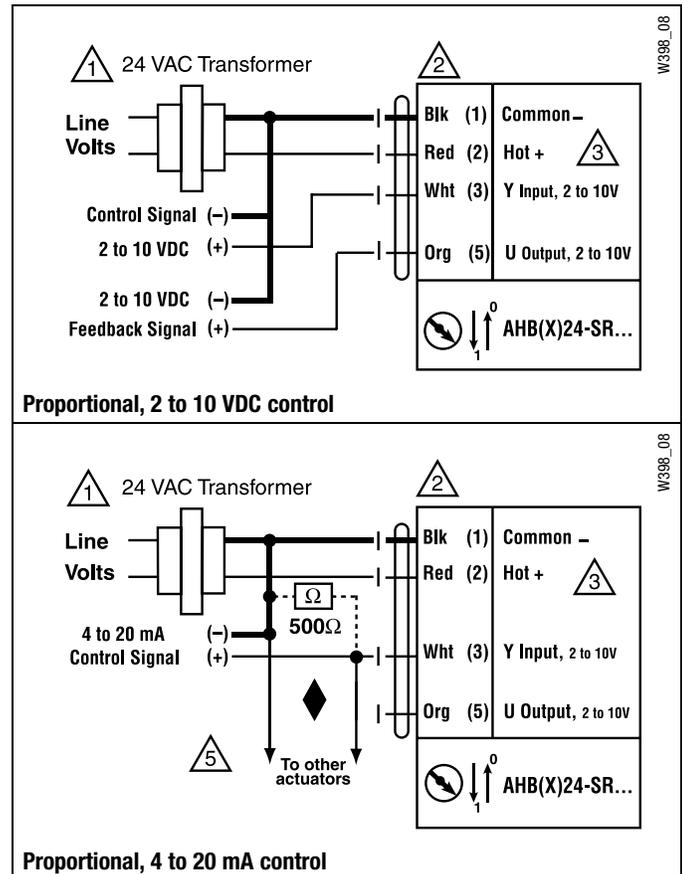
- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 5 Only connect common to neg. (-) leg of control circuits.

APPLICATION NOTES

- ◆ The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

WARNING Live Electrical Components!

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AHX120-SR(-100)(-200)

Proportional, Non-Spring Return, Linear Stroke, 120 V, for 2 to 10 VDC or 4 to 20 mA



Technical Data	AHX(X)120-SR(-100)(-200)
Power supply	100 to 240 VAC 50/60 Hz (nominal) 85 to 265 VAC 50/60 Hz (tolerance)
Power consumption	5 W (1.2 W)
Transformer sizing	7.5 VA (Class 2 power source)
Electrical connection	18 GA appliance rated cable 1/2" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout full stroke
Control	2 to 10 VDC, 4 to 20 mA
Input impedance	100 kΩ (0.1 mA), 500 Ω
Feedback output U	2 to 10 VDC (max 0.5 mA)
Linear stroke	
AHX120-SR-100	4 in [100 mm]
AHX120-SR-200	8 in [200 mm]
Linear force	101 lbf [450 N]
Stroke direction	reversible with ↓/↑ switch actuator will move in the selected direction with increasing control signal (2 to 10V)
Manual override	external push button
Running time	150 seconds per 4" [100mm] variable
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AHX120-SR-100	2.6 lbs [1.18 kg]
AHX120-SR-200	2.7 lbs [1.23 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Force min. 101 lbf for control of damper surfaces up to 32 sq. ft.

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator operates in response to a 2 to 10 VDC, or with the addition of a 500 Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

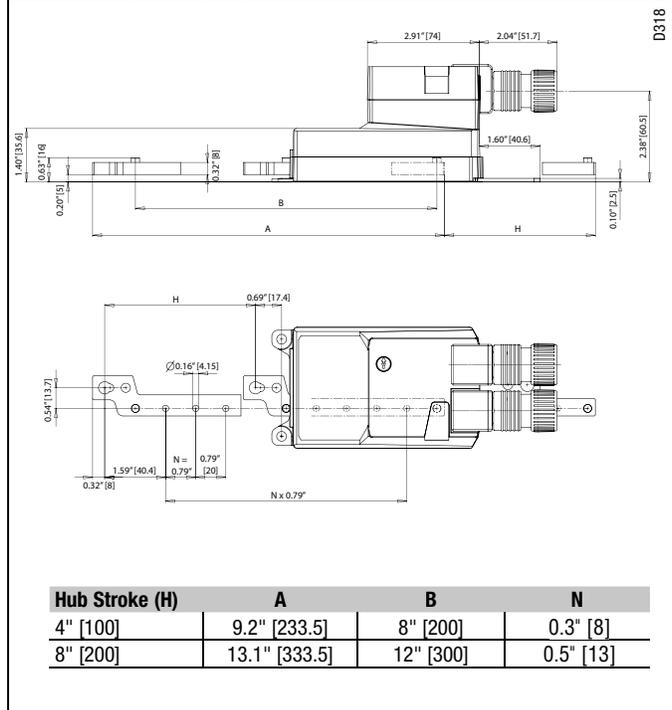
The AHX120 series provides 4 or 8 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHX120-SR... actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Dimensions (Inches [mm])



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Accessories

Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSA	Linear Coupling
P370	Shaft Mount Auxiliary Switch
SGA24	Min Positioners in NEMA 4 Housing
SGF24	Min Positioners for Flush Panel Mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

NOTE: When using AHB(X)120-SR... actuators, only use accessories listed on this page.

Typical Specification

Proportional control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500 Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position indication. Actuators shall be cUL Approved, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

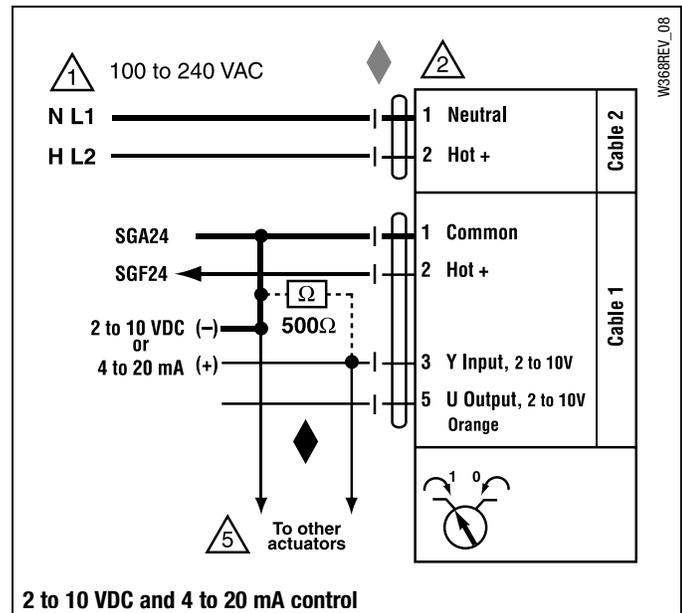
Wiring Diagram
INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.
- 5 Only connect common to neg. (-) leg of control circuits.

APPLICATION NOTES

- ◆ The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

WARNING Live Electrical Components!
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AHX24-MFT(-100)(-200)(-300)

Proportional, Non-Spring Return, Linear Stroke, 24 V, Multi-Function Technology®



MFT



Technical Data	AHX24-MFT(-100)(-200)(-300)
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 20%
Power consumption	3.5 W (1.3 W)
Transformer sizing	6 VA (Class 2 power source)
Electrical connection	18 GA plenum rated cable 1/2" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout full stroke
Control	2 to 10 VDC, 4 to 20 mA (default) variable (VDC, PWM, floating point, on/off)
Input impedance	100 kΩ (0.1 mA), 500 Ω 1500 Ω (PWM, floating point, on/off)
Feedback output U	2 to 10 VDC (max 0.5 mA) VDC variable
Linear stroke	
AHX24-MFT-100	4 in [100 mm]
AHX24-MFT-200	8 in [200 mm]
AHX24-MFT-200	12 in [300 mm]
Linear force	101 lbf [450 N]
Stroke direction	reversible with ↓/↑ switch
Manual override	external push button
Running time	150 seconds per 4" [100mm]
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	35dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AHX24-MFT-100	2.6 lbs [1.18 kg]
AHX24-MFT-200	2.7 lbs [1.23 kg]
AHX24-MFT-200	2.9 lbs [1.32 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Linear Force min. 101 lbf for control of damper surfaces up to 32 sq. ft.

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The default parameters for 2 to 10 VDC applications of the ...MFT actuator are assigned during manufacturing. If necessary, custom versions of the actuators can be ordered. The parameters can be changed by two means: pre-set and custom configurations from Belimo or on-site configurations using the Belimo PC-Tool software.

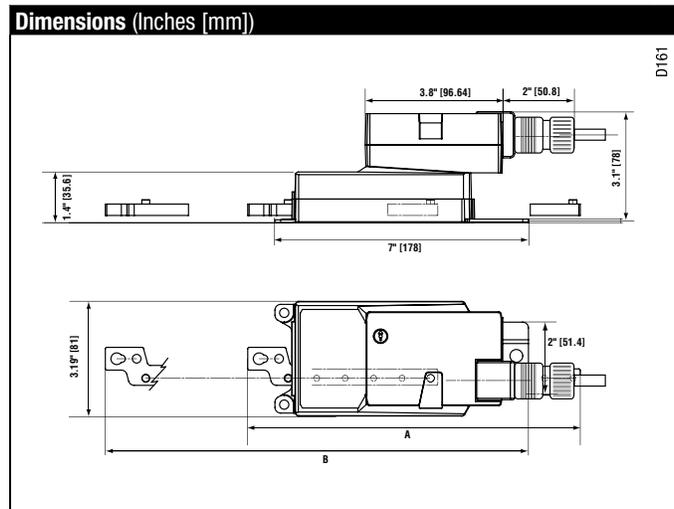
Operation

The actuator is not provided with and does not require and limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The AHX series provides 4, 8, or 12 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHX24-MFT... actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.



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Accessories	
Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
P370	Shaft Mount Auxiliary Switch
SGA24	Min Positioners in NEMA 4 Housing
SGF24	Min Positioners for Flush Panel Mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

NOTE: When using AHX24-MFT... actuators, only use accessories listed on this page.

Typical Specification

Proportional control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators must provide control in response to a control input from an electronic controller or positioner. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 Position feedback cannot be used with Triac sink controller. The actuator internal common reference is not compatible.
- 5 Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.
- 8 Contact closures A & B also can be triacs.
- 9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

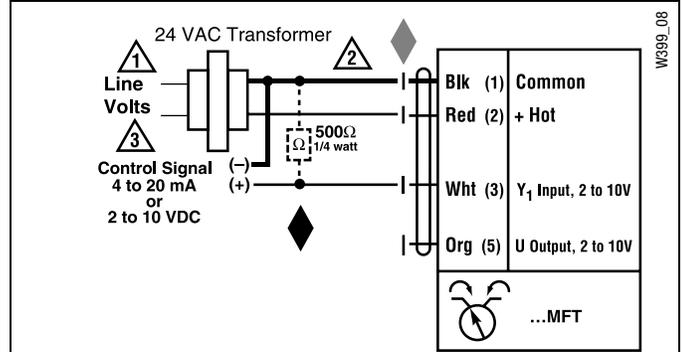
APPLICATION NOTES

◆ The ZG-R01 500 Ω resistor may be used.

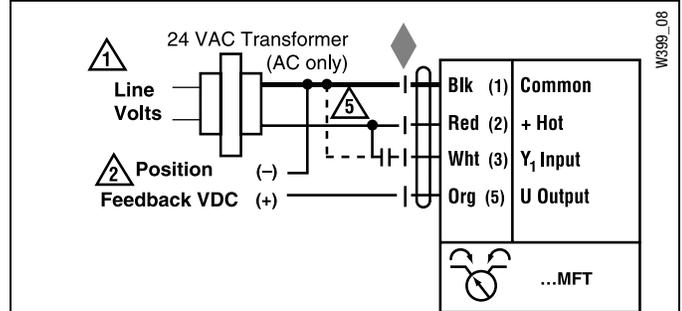
WARNING Live Electrical Components!

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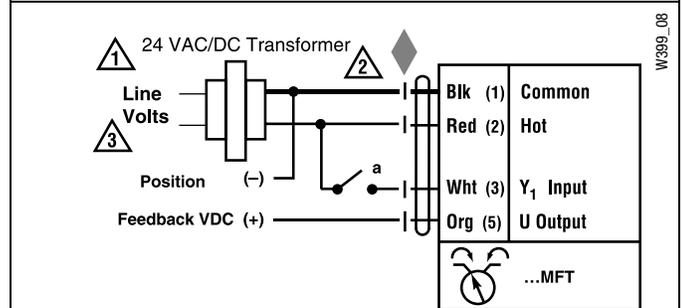
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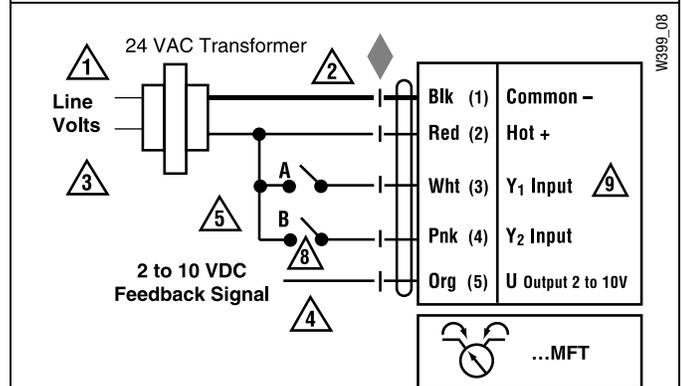
VDC/4-20 mA



PWM



On/Off control



Floating Point control

AHQB(X)24-1-100

On/Off, Non-Spring Return, Linear Stroke, 24 V



MFT



Technical Data	AHQB(X)24-1-100
Power supply	24 VAC \pm 20% 50/60 Hz 24 VDC \pm 20%
Power consumption	13 W (1.5 W)
Transformer sizing	23 VA (Class 2 power source)
Electrical connection	
AHQB24-1-100	3 ft [1m] 18 GA plenum rated cable protected NEMA 2 (IP54)
AHQX24-1-100	3 ft [1m] 10 ft [3m] 16 ft [5m] 18 GA plenum rated cable protected NEMA 2 (IP54)
Overload protection	electronic throughout full stroke
Control	on/off
Input impedance	1000 Ω
Linear stroke	1.6" to 4.0" [40mm to 100 mm]
Linear force	44 lbf [200 Nm]
Stroke direction	reversible with \downarrow/\uparrow switch
Manual override	external push button
Running time	7 seconds per 4" [100mm]
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	<52 dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	2.7 lbs [1.23 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.

Linear Force min. 44 lbf for control of damper surfaces up to 12 sq. ft.

Application

For On/Off control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

Operation

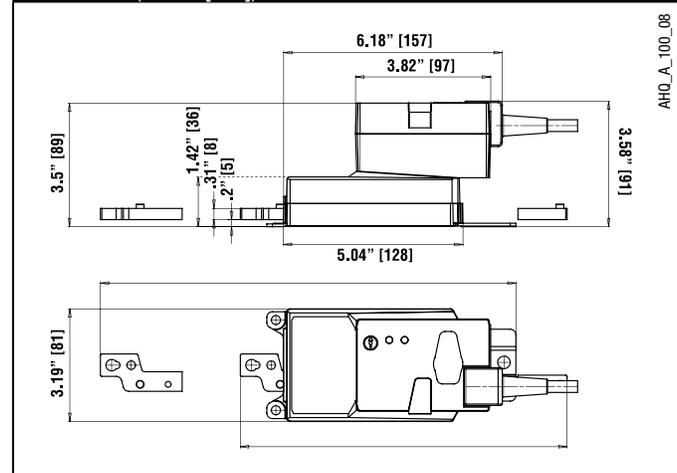
The actuator is not provided with and does not require and limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The AHQB(X) series provides 4" [100 mm] of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8" [20 mm] by means of the mechanical end stops.

When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The AHQB(X)24-1-100 actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Dimensions (Inches [mm])



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Accessories

Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
P370	Shaft Mount Auxiliary Switch

NOTE: When using AHQB(X)24-1-100 actuators, only use accessories listed on this page.

Typical Specification

On/Off control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators shall have brushless DC motor technology and be protected from overload at all positions of linear stroke. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cUL listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagram

✂️ INSTALLATION NOTES

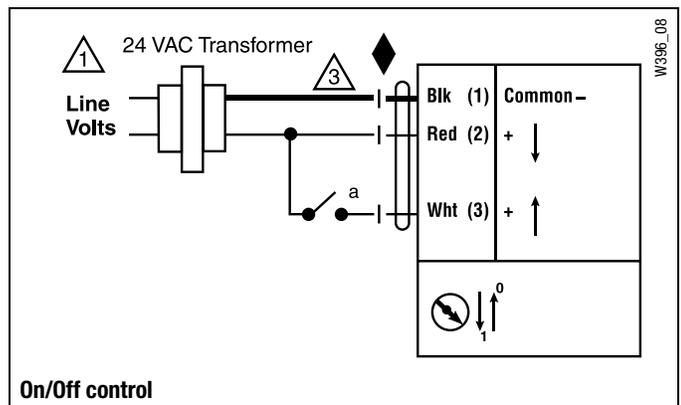
- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by 24 VDC.

📄 APPLICATION NOTES

- ◆ Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

⚠️ WARNING Live Electrical Components!

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AHQB(X)24-MFT-100

Proportional, Non-Spring Return, Linear Stroke, 24 V, Multi-Function Technology®



MFT



Linear Force min. 44 lbf for control of damper surfaces up to 12 sq. ft.

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The default parameters for 2 to 10 VDC applications of the ...MFT actuator are assigned during manufacturing. If necessary, custom versions of the actuators can be ordered. The parameters can be changed by two means: pre-set and custom configurations from Belimo or on-site configurations using the Belimo PC-Tool software.

Operation

The actuator is not provided with and does not require and limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

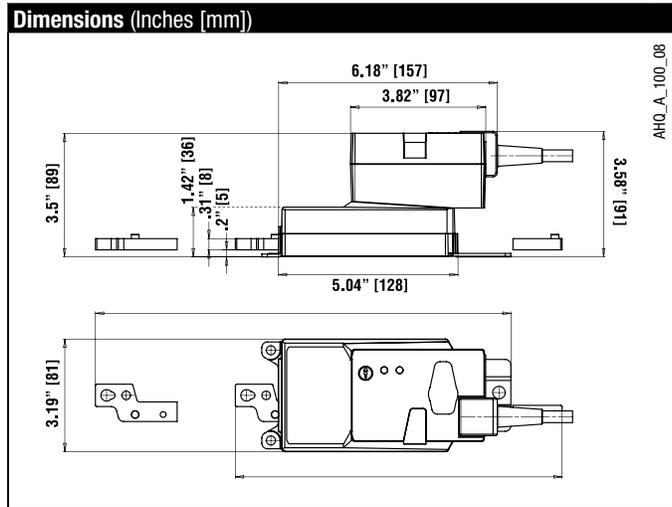
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The AHQB(X)24-MFT-100 actuators use a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Technical Data	AHQB(X)24-MFT-100
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 20%
Power consumption	13 W (1.5 W)
Transformer sizing	23 VA (Class 2 power source)
Electrical connection	
AHQB24-MFT-100	3 ft [1m] 18 GA plenum rated cable protected NEMA 2 (IP54)
AHQX24-MFT-100	3 ft [1m] 10 ft [3m] 16 ft [5m] 18 GA plenum rated cable protected NEMA 2 (IP54)
Overload protection	electronic throughout full stroke
Control	2 to 10 VDC, 4 to 20 mA (default) Variable (VDC, on/off)
Input impedance	100 kΩ (0.1 mA), 500 Ω, 1000 Ω (on/off)
Feedback output U	2 to 10 VDC, 0.5 mA max, VDC variable
Linear stroke	1.6" to 4.0" [40mm to 100 mm]
Linear force	44 lbf [200 Nm]
Stroke direction	reversible with ↓/↑ switch
Manual override	external push button
Running time	7 seconds per 4" [100mm] variable (7, 10, 15 or 35 seconds)
Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA 2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Noise level (max)	<52 dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	2.7 lbs [1.23 kg]

†Rated Impulse Voltage 800V, Type of action 1, Control Pollution Degree 3.



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Accessories	
Z-DS1	Rotary Support to Compensate Lateral Forces
Z-KSC	Linear Coupling
P370	Shaft Mount Auxiliary Switch
SGA24	Min Positioners in NEMA 4 Housing
SGF24	Min Positioners for Flush Panel Mounting
PTA-250	Pulse Width Modulation Interface
IRM-100	Input Rescaling Module
ADS-100	Analog to Digital Switch
ZG-R01	Resistor for 4 to 20 mA Conversion
NSV24 US	Battery Back-Up Module
ZG-X40	Transformer

NOTE: When using AHQB(X)24-MFT-100 actuators, only use accessories listed on this page.

Typical Specification

Proportional control damper actuators shall be electronic type, with integrated linear stroking arm. Actuators must provide control in response to a control input from an electronic controller or positioner. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

✂️ INSTALLATION NOTES

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Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
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- 5 Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.

📄 APPLICATION NOTES

- ◆ The ZG-R01 500 Ω resistor may be used.

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